AT&T/WCOM Response to Record Requests

Date	No.	Page	Description
11-28-01	9	5323	What remote terminal line concentration ratio do AT&T and Worldcom use to engineer their own CLEC-facilities-based networks when they use GR-303 technology, assuming that they use such technology at all?

AT&T/WCOM Response:

In accordance with the schedule established by the Staff, AT&T will respond to this record request by December 21, 2001.

AT&T/WCOM Response to Record Requests

Date	No.	Page	Description
11-28-01	10	5336	Please indicate, for AT&T and Worldcom separately, for each of the three switches that each most recently installed for use in providing CLEC-facilities-based services (hereafter the "six CLEC record request switches"), the ratio of the capitalized value of the initial capital outlay for engineering, furnishing, and installing the switch to the capitalized value of the initial capital outlay for the physical material of the switch, *i.e.*, calculate the EF&I ratio for each new switch job. Please document in detail the methodology, assumptions, calculations, and data used to develop these ratios.

AT&T/WCOM Response:

In accordance with the schedule established by the Staff, AT&T will respond to this record request by December 21, 2001.

AT&T/WCOM Response to Record Requests

Date	No.	Page	Description
Not previously asked			Please indicate whether the prices that AT&T and Worldcom paid for the six CLEC record request switches were based on vendor contracts or the result of competitive bidding. For each switch for which the price was a result of a competitive bid process, please submit the competitive bid sheets for each vendor that made a bid. Please document any adjustments made to these competitive bid sheets.

AT&T/WCOM Response:

In accordance with the schedule established by the Staff, AT&T will respond to this record request by December 21, 2001.

AT&T/WCOM Response to Record Requests

Date	No.	Page	Description
11-29-01	7	5392	Please submit copies of all discovery requests and responses to these requests relating to Verizon's October 18, 2001 end office switching study, Verizon's November 2, 2001 tandem switching study, and AT&T/Worldcom's September 21, 2001 switching and transport module.

AT&T/WCOM Response:

In accordance with the schedule established by the Staff, AT&T will respond to this record request by December 21, 2001.

AT&T/WCOM Response to Record Requests

Date	No.	Page	Description
11-29-01	14	5410	In answering the following questions, please assume that each month an average CLEC end user makes 50 local intra-switch calls, 150 local inter-switch calls, 25 long distance calls (for which the CLEC provides access using UNE-P), and that two percent of the local inter-switch calls and 20 percent of the access calls are tandem-routed. Under Verizon's proposed rates for unbundled signaling, does a UNE-P CLEC pay $343.41 per signal transfer point (STP) port per month and $0.16 per SS7 link per mile for signaling? If so, how many STP ports, SS7 links, and link miles would a UNE-P CLEC purchase to serve an average end user each month? If not, what per unit rates does a UNE-P CLEC pay for signaling, and how many units at these prices would a UNE-P CLEC purchase to serve an average end user each month? Please document completely the development of the UNE-P CLEC's demand for unbundled signaling elements. Under AT&T/Worldcom's proposed rates for unbundled signaling, does a UNE-P CLEC pay $8.94 per link per month, $0.00009 per signaling message for STPs, and $0.00103 per query for the service control points (SCPs) for signaling? If so, how many links, signaling messages, and queries would a UNE-P CLEC purchase to serve an average end user each month? If not, what per unit rates does a UNE-P CLEC pay for signaling, and how many units at these rates would a UNE-P CLEC purchase to serve an average end user each month? Please document completely the development of the UNE-P CLEC's demand for unbundled signaling elements.

<u>AT&T Response</u>:

In accordance with the schedule established by the Staff, AT&T will respond to this record request by December 21, 2001.

AT&T/WCOM Response to Record Requests

Date	No.	Page	Description
11-29-01	N/A	5606	Please provide in electronic form the attachments to AT&T/WorldCom's response to Data Request 14-10.

AT&T/WCOM Response:

In accordance with the schedule established by the Staff, AT&T will respond to this record request by December 21, 2001.

AT&T/WCOM Response to Record Requests

Date	No.	Page	Description
11-29-01	21	5608	Please provide workpapers and any other supporting documentation regarding the proposed correction, discussed by Mr. Turner, to include special access circuits in the algorithm for calculating ADM count at remote switches.

AT&T/WCOM Response:

In accordance with the schedule established by the Staff, AT&T will respond to this record request by December 21, 2001.

AT&T/WCOM Response to Record Requests

Date	No.	Page	Description
Not previously asked			What is the total number of months that a typical line will be used for xDSL services, *i.e.*, the sum of the service provided by the initial provider of xDSL and the service provided by all subsequent providers, over the useful life of the line? What is the average for lines of less than 18 kft total length? For lines in the 18- to 24-kft total length range? For lines in the 24- to 30-kft range? Please provide any and all evidence in support of these answers.

Response:

This response contains information that is proprietary to AT&T.

AT&T/WCOM Response to Record Requests

Date	No.	Page	Description
Not previously asked			Please provide an estimate, along with any and all supporting evidence, of the xDSL penetration rates over the next five years for lines of less than 18 kft: (1) in Virginia, (2) in Verizon territory, and (3) nationwide.

Response:

This response contains information that is proprietary to AT&T.

AT&T/WCOM Response to Record Requests

Date	No.	Page	Description
Not previously asked			What is the average number of loops for which bridged tap is removed in a single dispatch? If the answer depends on structure type (*i.e.*, aerial, underground, or buried), density zone, or other factors, please break out the averages by these factors. Please submit any and all evidence in support of the answer.

<u>AT&T/WCOM Response</u>:

The average number of loops for which bridged tap should be removed in a single dispatch is a function of loop length, *i.e.* greater than or less than 18,000 feet. Loop lengths less than 18,000 feet are relatively short and in general are larger in size. This presents an opportunity to unbridge more loops. Cooper loops in excess of 18,000 feet require the installation of load coils for voice grade service. Transmission guidelines preclude the bridging of loops between load coils and consequently the only acceptable location for bridged taps would be in the "end section" (within 3,000 to 12,000 feet of the customer location). Since cable sizes generally diminish the farther they travel from the Central Office, the opportunity to unbridge loops would similarly diminish. Therefore, on average, a highly conservative estimate for non-loaded loops (less than 18,000 feet) that can be unbridged in a single dispatch is 50 pairs. For those instances where loaded loops (greater than 18,000 feet) are involved, 25 pairs would represent a highly conservative estimate per dispatch.

It should be noted that entry into working cables creates the potential for affecting customer service and should be minimized. This is standard operating procedure throughout the industry. Additionally, cables are comprised of binder groups (25 pairs to a group). Industry practice calls for treating all pairs within the binder group similarly to maintain the binder group integrity.

AT&T/WCOM Response to Record Requests

Date	No.	Page	Description
Not previously asked			Where a substantial amount of bridged tap is removed from an entire binder group of lines, what benefits will accrue to lines other than the one that "triggered" the conditioning? For example, are those other lines likely to experience significant improvements in throughputs? Are non-xDSL lines affected, and if so, how? For example, would analog modems on such lines achieve higher throughputs?

AT&T/WCOM Response:

The benefits of unbridging multiple loops are manifold. First, bridge tap removal transitions the network towards present days engineering standards (see OSP Design History – attached). Second, transmission of voice grade service is improved because the "insertion loss" caused by the bridged tap is removed. While this improvement may appear negligible in many voice grade designs, it can be crucial to designs requiring the transmission of higher frequencies, *e.g.* modem transmission. In general, as the frequency increases the negative impact of bridged tap increases. Third, the unbridged loops provide a base of preconditioned pairs that could be utilized for future services that are incompatible with the amount of bridged tap. Fourth, unbridging loops reduces the exposure of the plant to maintenance problems. For example, should the non-working side of the bridged loop experience a trouble, it will impact the service on the working side of the loop. Fifth, unbridging multiple pairs precludes the need to re-enter a working splice on numerous occasions and potentially causing customer outages. Finally, unbridging multiple pairs at a location substantially reduces the "conditioning" cost on a "per unit" basis.

Additionally, unbridging multiple pairs at a location substantially reduces the "conditioning" cost on a "per unit" basis.

OSP Design - History

DISTRIBUTION NETWORK DESIGN EVOLUTION

A. Multiple Plant (pre 1960's) design involves splicing two or more distribution pairs to a signal feeder pair. That is, feeder and distribution plant are combined with no interface between them. This procedure provides flexibility to accommodate future assignments by providing multiple appearances of the same loop pair at several distribution locations. In times when multiparty service was common, it accommodated field bridging of party line stations, saving feeder pairs at the cost of added field work for rearrangements. However, adding new feeder pairs forced line and station transfers to relieve the distribution cables. Because changing existing plant or adding new facilities is labor intensive and because party line service continues to shrink, multiplied plant design has been largely replaced by other designs [1].

This very old design created many cases of "bridged tap." Bridged tap [occurs when] an extra pair of wires [is] connected in shunt [parallel] to a main cable pair. The extra pair is normally open circuited but may be used at a future time to connect the main pair to a new customer. Short bridged taps do no effect voice frequency signals but

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[1] Bellcore, Telecommunications Transmission Engineering, 1990, pg. 92

can be extremely detrimental to high frequency digital signals [2]. Bridge tap was use by telephone companies to provide facilities less expensively in a market where not all subscribers would want telephone service. Since the exact customer requesting dial tone, among several, could not be predicted, use of bridged tap permitted the company to draw dial tone on one pair of wires terminated at several locations.

B. Dedicated Plant (late 1960's): Dedicated Plant was a short-lived attempt to provide a permanently assigned cable pair from the Central Office Main Distributing Frame (MDF) to each customer's Network Interface. This resulted in minimal network flexibility, and created maintenance problems "…..[D] edicated Plant has been superseded by Interfaced Plant"[3]

C. Interfaced Plant (1960's – 1972): Interfaced Plant Design guidelines mandated the use of a Feeder Distribution Interface (FDI), i.e. a manual cross connection and demarcation point between feeder and distribution plant. Compared to Multiple and Dedicated Plant, Interfaced Plant provides greater flexibility in the network. The serving area concept, discussed below, uses the Interfaced Plant Design[4]

D. Serving Area Concept (1972-1980+): The Serving Area Concept (SAC) design was introduced into plant during the early 1970's. This simplified engineering planning and design method, was the first major attempt to migrate the plant to one that was

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[2] Gilbert Held, Dictionary of Communications Technology, John Wiley & Sons, 1995, pg. 56

[3] Bellcore, Telecommunications Transmission Engineering, 1990, pg.92

capable of ubiquitous service to an ever shifting customer base. The following are the crucial drivers of SAC design that form the foundation for modern day Outside Plant Planning and Design Concepts. (It is noteworthy to point out that these design criteria have been institutionalized in the Outside Plant for nearly three decades.)

1. Portions of the geographic area of a Wire Center are divided into discrete serving areas.

2. The Outside plant within the serving area is the distribution network. It is connected to the feeder network at a single interconnection point, the Serving Area Interface [or Feeder Distribution Interface].

3. It simplifies and reduces engineering and plant records necessary to design, construct, administer, and maintain Outside Plant.

4. It aids transmission by minimizing bridged taps, a distinct advantage in providing services of bandwidth greater than voice[5] .

The SAC concept also ensures that there should be no multiplied copper feeder cable (i.e. no bridged tap at all in copper feeder plant), no multiplied copper cable binder groups between distribution cable side legs (i.e. no bridged tap at all in copper distribution plant), and that a primary and secondary copper distribution pair would be dedicated to a customer's block terminal, with those pairs cut dead beyond the

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[4] Bellcore, Telecommunications Transmission Engineering, 1990, pp. 92-93
[5] Bellcore, Telecommunications Transmission Engineering, 1990, pp. 92-93

serving terminal (i.e. no bridged tap in the form of "end section" for at least 2 pairs per dwelling unit).

E. Carrier Serving Area (1980+); The Carrier Serving Area Concept (CSA) was introduced nearly two (2) decades ago to care for increased bandwidth for customers and the anticipated proliferation of field based electronics. Initially, the CSA engineering planning and design guideline prescribed the maximum copper loop distance (beyond the Field Electronics) as the equivalent of 900 OHMS and was thus gauge dependent. The requirement was subsequently updated to nominally 9,000 feet of 26 gauge cable and 12,000 feet of coarser gauge cable. The maximum allowable bridge tap is 2.5 Kft, with no single bridged tap longer than 2.0 Kft. All CSA loops must be unloaded and should not consist of more than two gauges of cable[6].

[6] Bellcore, Bellcore Notes on the Network - Issue 3, December 1997, pg. 12-5

Before the
Federal Communications Commission
Washington, D.C. 20554

In the Matter of **Petition of AT&T Communications of Virginia, Inc., Pursuant to Section 252(e)(5) of the Communications Act, for Preemption of the Jurisdiction of the Virginia State Corporation Commission Regarding Interconnection Disputes with Verizon-Virginia, Inc.**	)	**CC Docket No. 00-251**

CERTIFICATE OF SERVICE

I hereby certify that on this 4th day of January, 2002, a copy of the public version of AT&T's Response to Commission staff record requests was sent via hand delivery, first class mail and/or by email to:

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